Amendments to the Claims

The following Listing of Claims, in which deleted text appears ~~struck through~~ or [[double-bracketed]] and inserted text appears underlined, will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A nucleic acid molecule having antisense activity comprising:

(i) a nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ complementary to a ~~nucleic acid sequence~~ gene encoding a prolamin polypeptide, or

(ii) a nucleic acid sequence having at least ~~about~~ 70% ~~homologous~~ homology to (i), ~~the complementary nucleic acid sequence having at least 15 contiguous nucleotide length~~ wherein the antisense activity reduces expression of the prolamin polypeptide and wherein the prolamin is of rice.

2. (Currently amended) The nucleic acid molecule according to claim 1 comprising said nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ complementary to a ~~nucleic acid sequence~~ gene encoding a prolamin polypeptide.

3. Canceled.

4. (Original) The nucleic acid molecule according to claim 1, wherein the prolamin is of japonica rice.

5. (Currently amended) The nucleic acid molecule according to claim 1, wherein the ~~complementary~~ nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ complementary to a gene encoding a prolamin polypeptide ~~has~~ is at least 50 ~~contiguous~~ nucleotides in length.

6. (Currently amended) The nucleic acid molecule according to claim 1, wherein the ~~complementary~~ nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ complementary to a gene encoding a prolamin polypeptide comprises a full length sequence encoding the prolamin polypeptide.

7. (Currently amended) The nucleic acid molecule according to claim 1, wherein the ~~complementary~~ nucleic acid sequence having at least 15 contiguous nucleotides

complementary to a gene encoding a prolamin polypeptide~~length~~ is a 5' terminal nucleic acid sequence encoding the prolamin polypeptide.

8. (Currently amended) The nucleic acid molecule according to claim 1, wherein the at least 15 contiguous nucleotide~~s~~ ~~length~~ complementary, is a nucleotide length of 50 nucleotide or less.

9. (Currently amended) The nucleic acid molecule according to claim 1, wherein the at least 15 contiguous nucleotide~~s~~ ~~length~~ complementary, is a nucleotide length of 30 nucleotide or less.

10. (Currently amended) The nucleic acid molecule according to claim 1, wherein the at least 15 contiguous nucleotide~~s~~ ~~length~~ complementary, comprises a sequence having at least 15 nucleotide~~s~~ ~~length~~ of a nucleic acid sequence encoding an amino acid sequence selected from the group consisting of SEQ ID NOs; 98-101.

11. (Original) The nucleic acid molecule according to claim 1, wherein the prolamin is a 13 kDa prolamin.

12. (Currently amended) The nucleic acid molecule according to claim 1, comprising a nucleic acid sequence of at least 15 contiguous nucleotide~~s~~ ~~length~~, complementary to:

(a) a polynucleotide having a nucleic acid sequence set forth in a SEQ ID NO, selected from the group consisting of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43 and 45, or a fragment sequence thereof;

(b) a polynucleotide encoding a polypeptide having an amino acid sequence set forth in SEQ ID NO: selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44 and 46, or a fragment sequence thereof;

(c) a polynucleotide encoding a polypeptide variant having at least one mutation selected from the group consisting of one or more amino acid substitution, addition and deletion in an amino acid sequence set forth in SEQ ID NO: selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44 and 46, and having a biological activity;

(d) a polynucleotide of an allelic variant of a DNA consisting of a nucleic acid sequence set forth in a SEQ ID NO, selected from the group consisting of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43 and 45;

(e) a polynucleotide encoding a species homolog or an ortholog of a polypeptide consisting of an amino acid sequence set forth in SEQ ID NO: selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44 and 46;

(f) a polynucleotide hybridizing to at least one polynucleotide of any of (a)-(e), and encoding a polypeptide having a biological activity; or

(g) a polynucleotide consisting of a base sequence having at least 70% identity with at least one polynucleotide of (a)-(e) or a complementary sequence thereof, and encoding a polypeptide having a biological activity.

Claims 13-15. Canceled.

16. (Currently amended) An agent causing RNA interference (RNAi) in rice comprising:

~~A nucleic acid molecule comprising:~~ A nucleic acid sequence (A) ~~A~~ comprising:

(i) a nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ of a ~~nucleic acid sequence~~ gene encoding a prolamin polypeptide, or

(ii) a nucleic acid sequence having at least ~~about~~ 70% ~~homologous~~ homology to (i)~~the nucleic acid sequence having at least 15 contiguous nucleotide length~~; and

~~(B)~~ a nucleic acid sequence (B) ~~B~~ comprising:

(iii) a nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ complementary to a ~~nucleic acid sequence~~ gene encoding a prolamin polypeptide, or

(iv) a nucleic acid sequence having at least ~~about~~ 70% ~~homologous~~ homology to (iii). ~~the complementary nucleic acid sequence having at least 15 contiguous nucleotide length~~

17. (Currently amended) The nucleic acid molecule according to claim 16, wherein the nucleic acid sequence (A) ~~A~~ and the nucleic acid sequence (B) ~~B~~ have a portion ~~substantially~~ complementary to each other.

18. (Currently amended) The nucleic acid molecule according to claim 16, wherein the nucleic acid sequence (A) ~~A~~ and the nucleic acid sequence (B) ~~B~~ are ~~substantially~~ complementary to each other.

19. (Original) The nucleic acid molecule according to claim 16, further comprising a spacer sequence.

20. (Currently amended) The nucleic acid molecule according to claim 19, wherein the ~~space~~ spacer sequence comprises an intron sequence.

21. (Currently amended) The nucleic acid molecule according to claim 19, wherein the space sequence is comprised between the nucleic acid sequence (A) ~~A~~ and the nucleic acid sequence (B) ~~B~~.

22. Canceled.

23. (Currently amended) A nucleic acid cassette comprising a nucleic acid sequence (B) having antisense activity, ~~B~~ comprising:

(i) a nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ complementary to a ~~nucleic acid sequence~~ gene encoding a prolamin polypeptide, or

(ii) a nucleic acid sequence having at least about 70% ~~homologous~~ homology to (i), ~~the complementary nucleic acid sequence having at least 15 contiguous nucleotide length~~

wherein the nucleic acid cassette reduces expression of the prolamin polypeptide in rice.

24. (Original) The nucleic acid cassette according to claim 23, further comprising a nucleic acid sequence encoding a foreign gene.

25. (Currently amended) The nucleic acid cassette according to claim 23, further comprising a nucleic acid sequence (A) ~~A~~ comprising:

(i) a nucleic acid sequence having at least 15 contiguous nucleotides ~~length~~ of a ~~nucleic acid sequence~~ gene encoding a prolamin polypeptide, or

(ii) a nucleic acid sequence having at least ~~about~~ 70% ~~homologous~~ homology to (i), ~~the nucleic acid sequence having at least 15 contiguous nucleotide length~~.

26. (Original) The nucleic acid cassette according to claim 25, further comprising a spacer sequence.

27. (Currently amended) The nucleic acid cassette according to claim 26, wherein the ~~space~~ spacer sequence comprises an intron sequence.

28. (Currently amended) The nucleic acid cassette according to claim 26, wherein the spacer sequence is comprised between the nucleic acid sequence (A) ~~A~~ and the nucleic acid sequence (B) ~~B~~.

29. (Currently amended) The nucleic acid cassette according to claim 24 or claim 25, further comprising a signal sequence~~cassette~~.

30. (Original) The nucleic acid cassette according to claim 29, wherein the signal sequence is located upstream of the foreign gene.

31. (Original) The nucleic acid cassette according to claim 29, wherein the signal sequence is a signal sequence of a storage protein.

32. (Original) The nucleic acid sequence according to claim 29, wherein the signal sequence is a prolamin signal sequence.

33. (Original) The nucleic acid cassette according to claim 24, further comprising a promoter sequence.

34. (Currently amended) The nucleic acid cassette according to claim 33, wherein the promoter sequence is operably linked to both the foreign gene and the nucleic acid sequence (B) ~~B~~.

35. (Currently amended) The nucleic acid cassette according to claim 24, wherein separate promoters are independently operably linked to the foreign gene and the nucleic acid (B) ~~B~~.

36. (Currently amended) The nucleic acid cassette according to claim 35, wherein a first promoter sequence is operably linked to the foreign gene ~~(promoter sequence A)~~, and a second promoter sequence is operably linked to the nucleic acid sequence (B) ~~B (promoter sequence B)~~, and the first and second promoter sequences are different to each other.

37. (Currently amended) The nucleic acid cassette according to claim 36, wherein the second promoter sequence ~~B~~ is a promoter promoting expression in a high level in seeds.

38. (Currently amended) The nucleic acid cassette according to claim 36, wherein the second promoter sequence ~~B~~ is derived from a storage protein promoter.

39. Canceled.

40. (Currently amended) The nucleic acid cassette according to claim 36 wherein the second promoter sequence ~~B~~ is derived from a promoter selected from the group consisting of a polyubiquitin promoter, 26 kD globulin promoter, glutelin A promoter, glutelin B promoter, 16 kD prolamin promoter, 13 kD prolamin promoter and 10 kD prolamin promoter.

41. (Currently amended) The nucleic acid cassette according to claim 36 wherein the first promoter sequence ~~A~~ is derived from a storage protein promoter.

42. (Currently amended) The nucleic acid cassette according to claim 36, wherein the first promoter sequence ~~A~~ is a promoter sequence naturally associated with the nucleic acid sequence (B) ~~B~~.

43. (Currently amended) The nucleic acid cassette according to claim 36 wherein the first promoter sequence ~~A~~ is derived from a promoter selected from the group consisting of 26 kD globulin promoter, glutelin A promoter, glutelin B promoter, 16 kD prolamin promoter, 13 kD prolamin promoter and 10 kD prolamin promoter.

44. (Currently amended) The nucleic acid cassette according to claim 36, wherein the first promoter sequence ~~A~~ is a prolamin promoter.

45. (Currently amended) The nucleic acid cassette according to claim 36, wherein the first promoter sequence ~~A~~ is derived from a prolamin promoter, and the second promoter sequence ~~B~~ is derived from a promoter other than the prolamin promoter.

46. (Currently amended) The nucleic acid cassette according to claim 33, comprising a signal sequence in frame between the foreign gene and the promoter sequence ~~in frame~~.

47. (Original) The nucleic acid cassette according to claim 25 further comprising a terminator sequence.

48. (Original) The nucleic acid cassette according to claim 47, wherein the terminator sequence is a terminator sequence of 10 kD prolamin.

49. (Currently amended) The nucleic acid cassette according to claim 25, further comprising a foreign gene, and the foreign gene is located upstream of both the nucleic acid sequence (A) ~~A~~ and the nucleic acid sequence (B) ~~B~~.

50. (Currently amended) The nucleic acid cassette according to claim 49 comprising a spacer sequence between the nucleic acid sequence (A) ~~A~~ and the nucleic acid sequence (B) ~~B~~.

51. (Currently amended) The nucleic acid cassette according to claim 49 comprising an intron sequence between the nucleic acid sequence (A) ~~A~~ and the nucleic acid sequence (B) ~~B~~.

52. (Currently amended) A method for producing a nucleic acid cassette comprising the steps of:

A) providing a nucleic acid cassette according to claim 23~~comprising a set of a nucleic acid cassette comprising a nucleic acid sequence B comprising a nucleic acid sequence having at least 15 contiguous nucleotides length complementary to a nucleic acid sequence encoding a prolamin polypeptide, or a nucleic acid sequence having at least about 70% homologous to the complementary nucleic acid sequence having at least 15 contiguous nucleotides length, and a nucleic acid sequence A comprising a nucleic acid sequence having at least 15 contiguous nucleotides length of a nucleic acid sequence encoding a prolamin polypeptide, or a nucleic acid sequence having at least about 70% homologous to the nucleic acid sequence having at least 15 contiguous nucleotideslength, a promoter sequence B upstream of the set, a foreign gene located upstream or downstream of the promoter sequence B, and a promoter sequence A operably linked to the foreign gene~~;

B) transforming a rice plant with the nucleic acid cassette; and

C) selecting a transformed rice plant ~~nucleic acid cassette~~ having ~~the~~ an amount of expression ~~amount~~ of prolamin that is partially reduced with respect to ~~the~~ an untransformed rice plant.

53. (Original) A vector comprising the nucleic acid molecule according to claim 1.

54. (Original) The vector according to claim 53, further comprising a sequence having a promoter activity.

55. (Original) The vector according to claim 54, wherein the sequence having the promoter activity is a storage protein promoter.

56. (Currently amended) The vector according to claim 53 wherein the sequence having the promoter activity is a promoter of ~~the~~ prolamin.

57. (Original) The vector according to claim 53, further comprising a terminator.

58. (Original) The vector according to claim 53, further comprising a sequence encoding a selectable marker.

59. (Original) The vector according to claim 53, further comprising a sequence encoding a foreign gene different from the nucleic acid molecule according to claim 1.

60. (Original) A plant cell comprising the nucleic acid molecule according to claim 1.

61. (Original) The plant cell according to claim 60, further comprising a nucleic acid molecule encoding a foreign gene different from the nucleic acid molecule according to claim 1.

62. (Currently amended) The plant cell according to claim 60, wherein the plant cell is from a rice species ~~from which the prolamin is derived, and the species of the plant are of the same species~~.

63. (Currently amended) The plant cell according to claim 60 wherein the plant cell is from a rice species ~~from which the prolamin is derived~~, and the species ~~of the plant are of~~ from which the prolamin is derived is the same variant.

64. Canceled.

65. (Original) The plant cell according to claim 60, wherein the species from which the prolamin is derived and the species of the plant are of a japonica rice.

66. (Original) The plant cell according to claim 60, having the nucleic acid molecule of claim 1 introduced in both alleles thereof.

67. (Original) A plant tissue comprising the plant cell according to claim 60.

68 - 76. Canceled.

77. (Currently amended) A starch preparation produced from the rice plant ~~body~~ cell according to claim 6068, ~~or the plant seed according to claim 75~~.

78. (Currently amended) A composition comprising a gene product of the foreign gene produced from the rice plant ~~body~~ cell according to claim ~~69~~ 61~~or the plant seed according to claim 76~~.

79. (Currently amended) A method for reducing an expression amount of a protein in a seed of ~~in~~ a rice plant, comprising the steps of:

A) ~~providing the nucleic acid molecule according to claim 1;~~

~~B)~~ introducing the nucleic acid molecule of claim 1 into the rice plant cell;

~~C)~~ B) redifferentiating the cell to produce a transgenic rice plant; and

~~D)~~ C) obtaining a seed from the transgenic rice plant.

80. (Original) The method according to claim 79, wherein the step of introducing is performed by Agrobacterium method.

81. (Currently amended) The method according to claim 79, further comprising the step of ~~E)~~ D) selecting a plant cell with the nucleic acid introduced therein.

82. (Original) The method according to claim 81, wherein the step of selecting is performed by determining resistance against an antibiotic.

83. (Currrently amended) A method for expressing a foreign gene in a rice plant seed, comprising the steps of:

providing the nucleic acid molecule according to Claim 1;

providing a nucleic acid encoding the foreign gene;

introducing the nucleic acid molecule according to Claim 1 and the nucleic acid encoding the foreign gene~~,~~ into a cell of the rice plant;

redifferentiating the cell to produce a transgenic rice plant; and

obtaining a seed from the transgenic rice plant.

84. (Original) The method according to claim 83, wherein the step of introducing is performed by Agrobacterium method.

85. (Currently amended) The method according to claim 83, further comprising the step of ~~F)~~ selecting a plant cell with the nucleic acid molecule introduced.

86. (Original) The method according to claim 85, wherein the step of selecting is carried out by determining resistance of the plant cell against an antibiotic.

87. (Currently amended) The method according to claim 83, further comprising the step of ~~G)~~ separating a gene product of the foreign gene from the seed.

88. (Original) A composition comprising a gene product of the foreign gene produced by the method according to claim 83.

89. (Currently amended) Use of a nucleic acid molecule according to claim 1 for reducing expression amount of a protein in a seed of a rice plant.

90. (Currently amended) Use of a nucleic acid molecule according to claim 1 for expressing a foreign gene in a seed of a rice plant.

91. (Currently amended) Use according to claim 90, wherein the expression of native proteins of the plant in the rice seed is reduced.